

WHAT IS CLAIMED IS:

- 1     1.     A device for emitting composite output light, said device comprising:  
2                 a light source that emits original light, the light source including a  
3     fluorescent layer having a property to convert some of said original light into first  
4     converted light; and  
5                 a wavelength-conversion region optically coupled to said light  
6     source to receive some of said original light and said first converted light, said  
7     wavelength-conversion region including a fluorescent material having a property  
8     to convert some of said original light into second converted light, said original  
9     light, said first light and said second converted light being components of said  
10    composite output light.
- 1     2.     The device of claim 1 wherein said light source is a light emitting diode  
2     die and wherein said fluorescent layer is a substrate of said light emitting diode  
3     die.
- 1     3.     The device of claim 1 wherein said fluorescent material of said  
2     wavelength-conversion region includes at least one of fluorescent organic dye,  
3     inorganic phosphor and nano-phosphor.
- 1     4.     The device of claim 1 wherein said fluorescent material of said  
2     wavelength-conversion region includes fluorescent particulates to scatter said  
3     original light and said first converted light that propagate through said  
4     wavelength-conversion region.
- 1     5.     The device of claim 1 wherein said wavelength-conversion region is  
2     configured to substantially enclose said light source over a surface on which said  
3     light source is positioned.
- 1     6.     The device of claim 5 wherein said wavelength-conversion region is  
2     positioned on said light source such that said light source is covered by said  
3     wavelength-conversion region.

- 1     7.     The device of claim 1 wherein said wavelength-conversion region is  
2     configured as a planar layer positioned over said light source.
- 1     8.     A method for emitting composite output light, said method comprising:  
2             generating original light within a light source;  
3             converting some of said original light into first converted light  
4     within said light source;  
5             converting some of said original light into second converted light  
6     outside of said light source; and  
7             emitting said original light, said first converted light and said  
8     second converted light as components of said composite output light.
- 1     9.     The method of claim 8 wherein said generating of said original light  
2     includes generating said original light within an active layer of a light emitting  
3     diode die.
- 1     10.    The method of claim 9 wherein said converting of said original light into  
2     said first converted light includes converting said original light into said first  
3     converted light at a fluorescent substrate of said light emitting diode die.
- 1     11.    The method of claim 8 wherein said converting of said original light into  
2     said second converted light includes converting said original light into said second  
3     converted light at a wavelength-conversion region optically coupled to said light  
4     source.
- 1     12.    The method of claim 11 wherein said converting of said original light into  
2     said second converted light includes converting said original light into said second  
3     converted light using fluorescence.
- 1     13.    The method of claim 12 wherein said converting of said original light into  
2     said second converted light includes scattering said original light and said first  
3     converted light propagating through said wavelength-conversion region.

1     14.     A device for emitting composite output light, said device comprising:  
2                     a semiconductor die that emits first light of a first peak wavelength,  
3     said semiconductor die including a fluorescent substrate having a property to  
4     convert some of the first light into second light of a second peak wavelength; and  
5                     a wavelength-conversion region positioned to receive at least some  
6     of said first light and said second light, said wavelength-conversion region having  
7     a property to convert some of said first light into third light of a third peak  
8     wavelength, said first light, said second light and said third light being  
9     components of said composite output light.

1     15.     The device of claim 14 wherein said semiconductor die is a light emitting  
2     diode die.

1     16.     The device of claim 14 wherein said wavelength-conversion region  
2     includes at least one of fluorescent organic dye, inorganic phosphor and nano-  
3     phosphor.

1     17.     The device of claim 14 wherein said wavelength-conversion region  
2     includes fluorescent particulates to scatter said first light and said second light that  
3     propagate through said wavelength-conversion region.

1     18.     The device of claim 14 wherein said wavelength-conversion region is  
2     configured to substantially enclose said semiconductor die over a surface on  
3     which said semiconductor die is positioned.

1     19.     The device of claim 18 wherein said wavelength-conversion region is  
2     positioned on said semiconductor die such that said semiconductor die is covered  
3     by said wavelength-conversion region.

1     20.     The device of claim 14 wherein said wavelength-conversion region is  
2     configured as a planar layer positioned over said semiconductor die.